R E P O R T R E S U M E S

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COMMENTS ON JAMES DAVIS' "THE CAMPUS AS A FROG POND--AN APPLICATION OF THE THEORY OF RELATIVE DEPRIVATION TO CAREER DECISIONS OF COLLEGE MEN."

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COMPLEX CAUSAL ARGUMENTS CAN BE CLARIFIED BY USE OF PATH ANALYSIS, A TECHNIQUE INTRODUCED INTO SOCIOLOGICAL LITERATURE BY DUNCAN ("PATH ANALYSIS--SOCIOLOGICAL EXAMPLES," AMERICAN JOURNAL OF SOCIOLOGY, 72, JULY, 1966, PP. 1-16). A STUDY BY DAVIS ON THE EFFECT OF COLLEGE "SELECTIVITY" ON CAREER ASPIRATIONS WAS RECONSIDERED FROM THE STANDPOINT OF A PATH ANALYTIC MODEL. RELATIONSHIPS PREVIOUSLY OVERLOOKED ARE BROUGHT EXPLICITLY INTO THE THEORETICAL DISCUSSION BECAUSE UNDERLYING ASSUMPTIONS MUST BE SPECIFIED. IN CERTAIN CIRCUMSTANCES, IT IS POSSIBLE TO DEAL WITH RECIPROCAL CAUSATION. BECAUSE OF THE EXPLICITNESS OF THE TECHNIQUE, INCONSISTENCIES AND DEBATABLE ASSERTIONS ARE REVEALED. IT IS CONCLUDED THAT THE VALIDITY OF DAVIS' COLLEGIATE VERSION OF THE RELATIVE DEPRIVATION THEORY REMAINS TO BE DEMONSTRATED, DESPITE HIS INTRODUCTION OF THE INTERVENING VARIABLE "FLAIR." (WR)

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Comments on James Davis' "The Campus as a Frog Pond: An Application of the Theory of Relative Deprivation to Career Decisions of College Men" *

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Abstract

The technique of path analysis, recently introduced into the sociological literature by Duncan ("Path Analysis: Sociological Examples," American Journal of Sociology, 72, July, 1966, pp. 1-16), can be a powerful aid in clarifying complex causal arguments. To demonstrate this point, a study by Davis of the effect of college "selectivity" on career aspirations ("The Campus as a Frog Pond: An Application of the Theory of Relative Deprivation to Career Decisions of College Men," loc. cit., pp. 17-31) was reconsidered from the standpoint of a path analytic model.

Comments on James Davis' "The Campus as a Frog Pond: An Application of the Theory of Relative Deprivation to Career Decisions of College Men"

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This paper will testify to the value of path analysis in clarifying complex causal arguments, such as those advanced by Davis in his study of "relative deprivation" in a college setting.[1] The three crucial variables in Davis' version of relative deprivation theory are School Quality (academic ability level of the college attended), College Grade Point Average (GPA), and Career Choice (the selection of high performance career fields--physical, biological, and social sciences, humanities and fine arts, law, and medicine--versus all other fields) at the time of graduation. A heuristic model of the causal relationships among

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Insert Figure 1 about here

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these variables is depicted in Fig. 1. Implicit in Davis' theory are the assertions that: (a) the relationship, School Quality $\longrightarrow$ GPA, is negative, which means that the higher the quality of the college a student attends, the lower his GPA will be; and (b) GPA $\longrightarrow$ Career Choice is positive, which means that the high ability student tends to choose a high performance career field. It follows from (a) and (b) that to the extent that the student at an elite college obtains lower grades than he would have at a less select college, his self-judgment, and consequently his career aspirations, will be relatively lower. Davis also theorized that the student does not adjust his self-judgment to

take into account School Quality, but instead measures himself--using GPA as a yardstick--against other students on his campus. Quality ⟶ Career Choice in Fig. 1 would be nonzero if the student were to adjust his self-judgment for School Quality: in other words, Davis hypothesized that Quality does not directly influence Career Choice. When restricted to the three variables in Fig. 1, any empirical test of his theory requires the moot assumption that Quality ⟶ Career Choice is not influenced by peer group and other facets of the college environment.[2]

Insert Figure 2 about here

Although Davis' analysis was set up in a nonparametric form that does not lend itself to calculation of path coefficients, it is possible to construct a path diagram that will clarify the logic and the implicit assumptions of his analysis, and at the same time be fairly consistent with his thinking. This diagram (see Fig. 2) includes Freshman Career Preference and Input Academic Aptitude, which were introduced by Davis as controls for spuriousness due to differential student input. The correlations (denoted by curved arrows) among Freshman Career Preference (X_1), Input Academic Aptitude (X_2), and School Quality (X_3) are treated as unanalyzed correlations. The residual factor "S" causing GPA is assumed to be uncorrelated with prior variables (X_1, X_2, and X_3), and the residual factor "T" causing Career Choice is assumed to be independent of prior variables (X_1, X_2, X_3, and X_4). It seems likely that: (a) Freshman Career Preference ⟶ GPA, since the more difficult a student's field of study, the lower his grades;

(b) Freshman Career Preference ⟶ Career Choice, because there is some stability in career choice over time; (c) Input Academic Aptitude ⟶ GPA, because academic ability is one determinant of college grades; and (d) Input Academic Aptitude ⟶ Career Choice, since changes in career choice are a function of academic ability.[3] Obviously the data lend themselves to analyses that Davis did not consider.

It is useful to note which variables are controlled when computing the path coefficients shown in Fig. 2. The controlled variables for p_{43} are Freshman Career Preference and Input Academic Aptitude; for p_{54} School Quality, Freshman Preference, and Input Aptitude; and for p_{53} GPA, Freshman Preference, and Input Aptitude. As evidence of "relative deprivation," Davis argued that Career Choice is associated more strongly with GPA than with School Quality, and that this differential cannot be explained by pre-college, scholastic aptitude differences among institutions or by students' career preferences as freshmen. This argument amounts to showing that the partial association of GPA with Career Choice (when Quality, Freshman Preference, and Input Aptitude are controlled) is greater than the partial association of Quality with Career Choice (when GPA, Freshman Preference, and Input Aptitude are controlled). In terms of path coefficients, the argument is that $p_{54} > p_{53}$, which is irrelevant since Davis' theory requires proof that Quality ⟶ GPA (p_{43}) is negative, GPA ⟶ Career Choice (p_{54}) positive, and Quality ⟶ Career Choice (p_{53}) near zero. Of course, if p_{54} were positive and p_{53} zero, then p_{54} would be greater than p_{53}. However, a finding that $p_{54} > p_{53}$ would not prove that p_{54} was positive or p_{53}

near zero. If this were the ideal parametric case, and input test scores were available, Davis' theory could be tested by direct calculation of p_{43}, p_{53}, and p_{54}. If p_{53} turned out to be meaningfully positive, it would have to be argued either that students do adjust career aspirations to compensate for School Quality and/or that other influences are present. Any finding that p_{53} was negative would be surprising, and would indicate that attending a high quality college has a negative effect on career aspirations for reasons other than relative deprivation. If p_{53} and p_{54} were positive, and p_{43} negative, the size of the mediated effect ($p_{43} \times p_{54}$) could be compared with the size of the direct effect (p_{53}) of Quality on Career Choice to determine if the net overall influence of college quality on aspirations were positive or negative. No definitive analysis is possible, because input test scores that must be controlled in order to compute p_{43}, p_{54}, and p_{53} were not available in this case.

The path diagram can be an aid in understanding Davis' analyses.

1. The gamma coefficient of School Quality with GPA (-.333 for men) among the National Merit group (all high scorers) in Davis' Table 3 is not parallel to p_{43}, because Freshman Career Preference was not controlled.

2. In his Table 5, the partial gammas of GPA X Career Choice with Quality and Freshman Preference controlled (.311), and of Quality X Career Choice with GPA and Freshman Preference controlled (.151), do not parallel p_{54} and p_{53} respectively, because Input Aptitude was not controlled.

3. In Table 7, the partial gamma of Career Choice X GPA with Freshman Preference controlled (.264) among the National Merit group is not parallel to p_{54}, because School Quality was not controlled.

4. Likewise in Table 7 (National Merit group), the partial gamma of Career Choice X School Quality with Freshman Preference controlled is not comparable to p_{53}, because GPA was not controlled. Since this partial gamma is the net influence of School Quality on Career Choice, Davis implies that it should be negative, whereas, in fact, it is slightly positive (.023).[4] Therefore one cannot argue that there is relative deprivation among the National Merit group.
The validity of Davis' collegiate version of the relative deprivation theory remains to be demonstrated.

Insert Figure 3 about here

Davis' introduction of "Flair"--an intervening variable between GPA and Career Choice--as a measure of the student's subjective feelings of academic success had some potential for a more convincing analysis of the data.[5] This potential was not realized, partly because of failure to consider the entire pattern of relationships. Fig. 3 represents a revised heuristic model that includes Flair. Davis postulated a negative, mediated effect, Quality⟶GPA⟶Flair⟶Career Choice. The theoretical statement that cross-campus comparisons are rare corresponds to the assertion that the strength of Quality⟶Flair is close to zero. Quality⟶Career Choice probably reflects other influences of the college on career aspirations, such as the effect of fraternizing with other, very able students. Because Quality⟶Career Choice in Fig. 1 is the confounded sum of Quality⟶Flair and Quality⟶Career Choice in Fig. 3, Fig. 3 is the much superior model. Although Davis

said nothing about GPA⟶Career Choice in Fig. 3, it is possible that intervening variables other than Flair mediate the correlation of GPA with Career Choice. (For example, in the high performance fields, faculty members may try to attract students with the highest GPAs.) Moreover, Davis' argument that Flair should be more strongly related to GPA than to School Quality is not really evidence of relative deprivation.

In summary, the construction of a path diagram like Fig. 2 brings to light previously-overlooked relationships that might well be brought explicitly into the theoretical discussion. Another advantage is that the assumptions underlying the analysis must be specified. For example, in this case it was assumed that the residual factors determining GPA and Career Choice are uncorrelated (with each other and with the appropriate, independent variables); that all measures are perfectly reliable and valid; and that college grades influence, but are not influenced reciprocally by, career aspirations. In some circumstances, it is possible to deal with reciprocal causation using path analysis.[6] The explicitness of the technique makes it easy for the critic to spot inconsistencies and debatable assertions.

Footnotes

1. James A. Davis, "The Campus as a Frog Pond: An Application of the Theory of Relative Deprivation to Career Decisions of College Men," American Journal of Sociology, 72 (July, 1966), pp. 17-31. Although we assume full responsibility for the remarks presented here, Dr. Davis' encouragement and comments on earlier drafts were an essential catalyst. An excellent discussion of path analysis is provided by Otis D. Duncan, "Path Analysis: Sociological Examples," loc. cit., pp. 1-16.

2. See Donald L. Thistlethwaite and Norman Wheeler, "Effects of Teacher and Peer Subcultures Upon Student Aspirations," Journal of Educational Psychology, 57 (1966), pp. 35-47.

3. James A. Davis, Undergraduate Career Decisions, Chicago: Aldine, 1965.

4. An unpublished study of my own, which included test scores for a broad sample of students, also found little evidence of relative deprivation.

5. Subjective feelings are notably difficult to measure, even with a substantial number of items in the scale. That only a single item was used in the Davis study may mean that the analyses which included "Flair" were almost pure speculation.

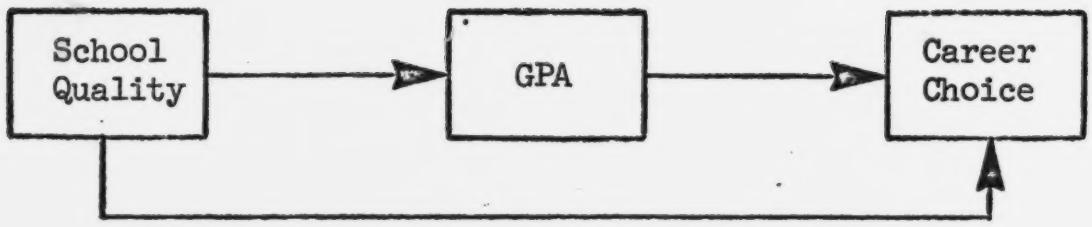
6. Sewall Wright, "The Treatment of Reciprocal Interaction, With or Without Lag, in Path Analysis," Biometrics, 16 (September, 1960), pp. 423-445.

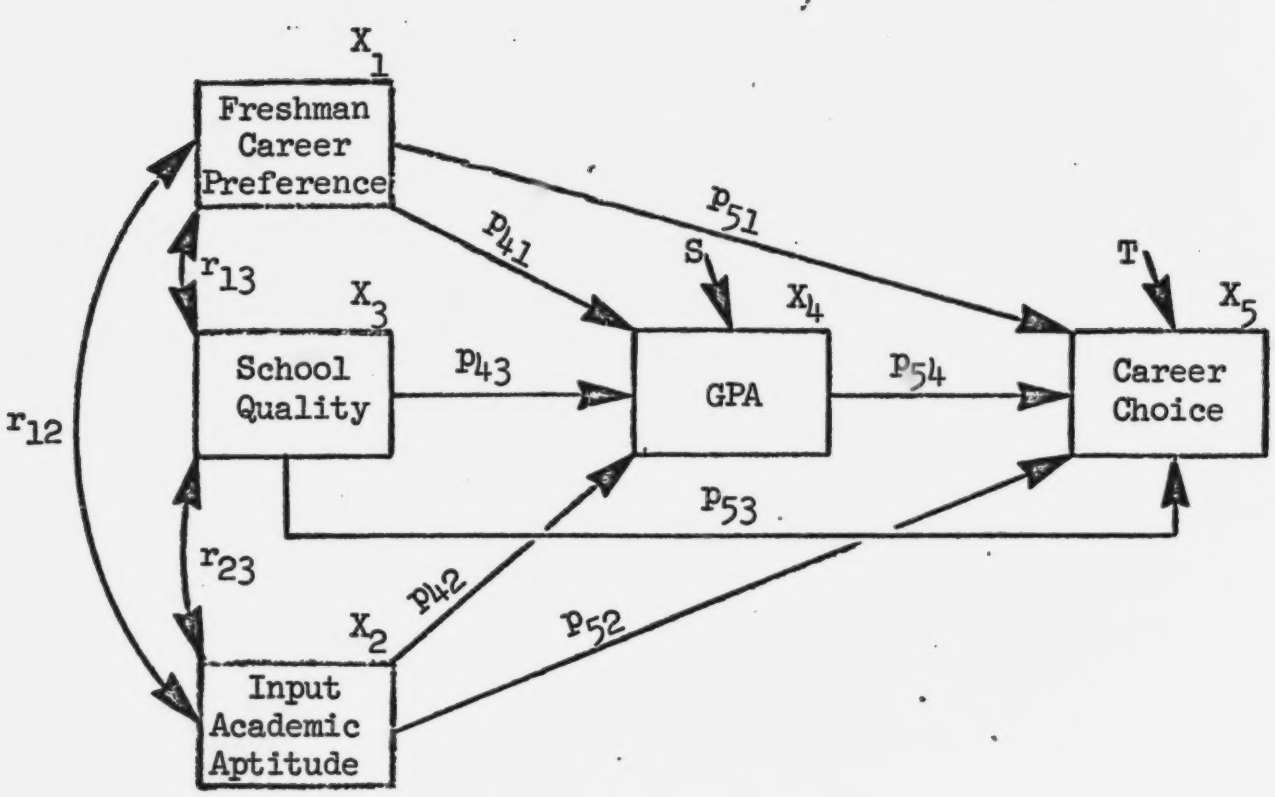
Figure Captions

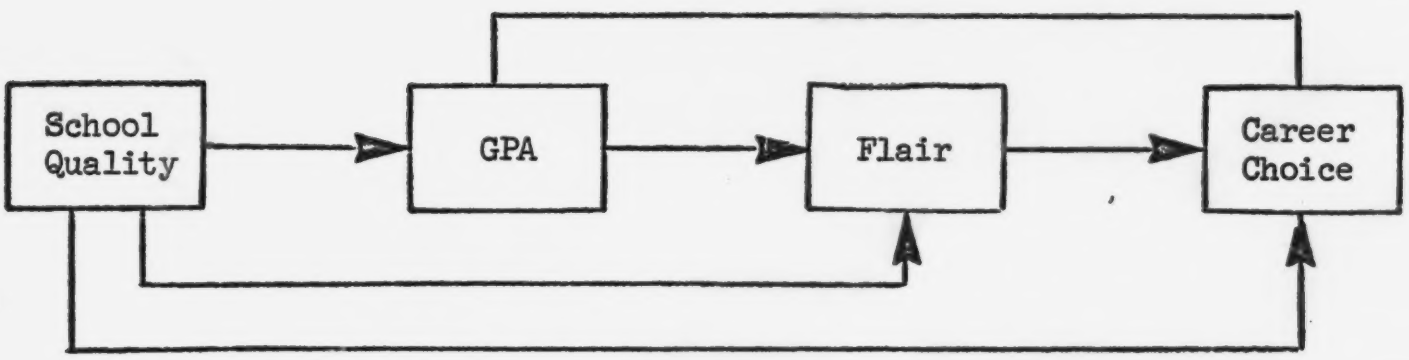
Fig. 1. Heuristic model of Davis' version of relative deprivation.

Fig. 2. Path diagram for the theory of relative deprivation.

Fig. 3. Revised heuristic model including "Flair."


School Quality
GPA
Career Choice


X1
Freshman Career Preference
p51
p41
S
T
r13
X3
X4
X5
School Quality
p43
GPA
p54
Career Choice
r12
p53
r23
p42
X2
p52
Input Academic Aptitude


School Quality
GPA
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